

## REMARKS

Claims 11-15 were objected as neither claim 5 nor 11 (or 13) recite any use, application, or involvement with “a model for glide avalanche.” See paragraph 1 of the Action. This objection is respectfully traversed and should be overcome in light of this Amendment.

Claims 5-16 and 18-20 were rejected under 35 USC 101. This rejection is respectfully traversed.

The Examiner’s argument is that the invention of these claims is directed to a non-statutory subject matter. This is totally incorrect. The Examiner cited MPEP 2106 for the proposition that an invention should produce “useful, concrete, and tangible result.” The present invention meets this criterion.

In the disc recording media industry, minimizing disc roughness has been the primary focus to improve glide avalanche performance of a magnetic disc. However, as the fly height becomes less than 0.5 micro-inch and the disc roughness improved to less than 3Å in average roughness (Ra), longer wavelength component (micro-waviness) of the disc topography become a substantial part of the disc avalanche. Prior art roughness models that depend on Ra alone could no longer be used to predict disc glide avalanche performance. Thus, a more precise model, which considers both Ra and micro-waviness effects was needed prior to this invention.

This invention meets this long-felt need by providing useful, concrete and tangible results that relate head-media spacing modulation with variables affecting processing of the actual disc media surface. These results are useful in both determining the quality of the disc media as well as for determining the variables that affect processing of the disc media surface.

Claims 5-15 were rejected under 35 USC 112, first paragraph. This rejection is respectfully traversed.

Prior to this Amendment, claims 5-15 were original claims. These claims were fully supported in the original specification. Therefore, there was no problem of a lack of written description of claim 5-15 to begin with.

The Examiner states that careful consideration of disclosure fails to reveal an act of “multiplying the topography function and the air bearing function transfer function” that results in “a spread in values of the head-media spacing modulation.” Foremost, the Examiner is making a basis error in ignoring the claims as being part of the complete disclosure. Thus, on its face, the Examiner’s statement that the disclosure fails to reveal an act of “multiplying the topography function and the air bearing function transfer function” which results in “a spread in values of the head-media spacing modulation” is incorrect. This act is disclosed in the specification in claim 5 in the original application. Furthermore, Applicants respectfully submit that Equation (1) mathematically discloses multiplying the topography function and the air bearing function transfer function on the left hand side and the right hand side of the equation discloses a spread in values of the head-media spacing modulation. In short, it appears that the Examiner has failed to understand the mathematical equations in the specification.

The Examiner also states that he is unaware of the term “convoluted.” Applicants respectfully submit that this is a well known term in mathematics. However, in order to overcome the Examiner’s confusion regarding “convoluted” and whether “power spectral density function” is synonymous with “topography function,” Applicants first request the Examiner to focus on Equation (1A) of the specification. In this equation, function “Y” is a power spectral density of disc topography, function “A” is an air bearing transfer function, and “ $\lambda$ ” is a variable dependent on disc topography. The product of the power spectral density and air bearing function integrated as shown in Equation (1A) results in the head-media spacing (HMS) modulation. In short, the ordinary reading of claim 5 in light of Equation (1A) shows that “power spectral density function” is synonymous with “topography function.” Also, the term “convoluted” or “convolution” is “an integral that expresses the amount of overlap of one function  $g$  as it is shifted over another function  $f$ . It therefore “blends” one function with another.” See <http://mathworld.wolfram.com/Convolution.html>. The Examiner is kindly requested to visit the website listed above as it explains the meaning of convolution with animations that graphically illustrate the convolution of two rectangle functions and two

Gaussians. If the Examiner still fails to understand this invention and the meaning of convolution, then the Examiner is requested to discuss these issues with another Examiner who has a background in mathematics.

Claims 2-15 were rejected under 35 USC 112, second paragraph. This rejection is respectfully traversed.

The Examiner states that there is no logical nexus between “simulating a head passing in near proximity to a simulated disc media surface” and “to generate an air bearing transfer function.” Applicants respectfully submit that the Examiner should kindly review paragraphs [0029] and [0030] on page 7 of the specification. In particular, paragraph [0030] explains, “Such air bearing code may be used to simulate flying behavior of the head selected at step 22, namely flying the head above the simulated topography provided at step 21.” Thus, the logical nexus between “simulating a head passing in near proximity to a simulated disc media surface” and “to generate an air bearing transfer function” is clearly provided in the specification.

The term “spectrum” is no longer recited in the claims. Thus, the objections raised by the Examiner regarding this term are moot.

Claim 7 has been amended such that “power spectral density function” has been changed to “topography function.”

The Examiner states in paragraph 6 that is unknown as to what the results of the square-root-summing are correlated to. Please refer to paragraph [0043] which states, “Correlation between GA (glide avalanche) and topography, HMS\_Wq, HMS\_Rq, and RMS sum of HMS-Wq and HMS-Rq, were plotted in Fig. 6.” In short, the square-root-summing are correlated to glide avalanche. Paragraphs [0044] and [0045] further explain how the correlation is performed.

In light of the above explanation and amendments of the claims, the rejections under 35 USC 112, first and second paragraphs, should be withdrawn.

Claims 5-16 and 18-20 were rejected as being anticipated by Gonzalez. This rejection is respectfully traversed.

The pending application claims benefit from Provisional Application 60/276,764, filed March 16, 2001. Gonzalez was published in July 2001. The Examiner states that the IEEE meeting occurred on January 7-11, 2001. Thus, the Examiner is *speculating* that Gonzales, which was published in July 2001, was available at the time of the IEEE meeting in January 2001. However, this speculation of the Examiner is *totally without evidence*. Thus, Applicants respectfully submit that the Examiner has *not* established a *prima facie* case of anticipation.<sup>1</sup>

Claim 16 has been rejected as being obvious over Bogy. This rejection is respectfully traversed.

Claim 16 recites “providing disc drive operation parameters; determining an air bearing transfer function from the air bearing code.” The Examiner has failed to establish a *prima facie* case of obviousness for having failed to explain where Bogy discloses the above limitations.

Furthermore, the Examiner has stated, “It would have been obvious to a person of ordinary skill in the art to repeat the method disclosed by Bogy with a plurality of wavelengths, each defined by a combination of slider position and rate of disk rotation, because that person would immediately recognize that actual disk drive in normal use operate at a wide range of such values.” See page 15, lines 10-13, of the Action. Applicants respectfully submit that the Examiner is simply hypothesizing from the teachings of this invention. Nowhere does Bogy provide any suggestion or motivation for “determining simulated head-media spacing modulation for each of a plurality of disc wavelengths” as recited in claim 16. All that Bogy discloses is that “the curvature is very small for this disk track; since the runout amplitude is only about 2 $\mu$ m, and it is essentially one wavelength for the entire track.” Page 233, left column, of Bogy. Even if persons of ordinary skill would have known that actual disk drives in normal use have a plurality of wavelengths, which the Examiner has asserted *without* any evidence, there is no suggestion in Bogy that one should “determin[e] simulated head-media spacing modulation for each of a

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<sup>1</sup> Once the Examiner establishes that Gonzales was available at the IEEE meeting in January 2001, Applicants may consider antedating Gonzalez by filing a Rule 131 declaration. However, Applicants are under *no* obligation to file a Rule 131 declaration until it is *clearly established* that Gonzales was *available to the public* in January 2001.

plurality of disc wavelengths” as recited in claim 16. According to the Examiner’s logic, if persons of ordinary skill in the art would have knowledge of an object or characteristics, then it automatically implies that persons of ordinary skill in the art would have been motivated to study that the object or characteristics. This logic is totally faulty.

In light of this Amendment, a Notice of Allowance is respectfully solicited.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to

**Deposit Account No. 03-1952** referencing attorney docket No. **146712013800**.

Respectfully submitted,

Dated: April 17, 2006

By: \_\_\_\_\_

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